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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,758	05/31/2001	Kenichi Nishikawa	040894-5665	6103

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EXAMINER
LEURIG, SHARLENE L

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 12/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/867,758	NISHIKAWA, KENICHI
	Examiner	Art Unit
	Sharlene Leurig	2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Examiner's Notes

2. In claims 1 and 3 lithium oxide should be written as Li_2O. In claim 4 the alkaline earth metal component should be referred to consistently as RE, or REO when in oxide form, namely in the last two lines of the claim which now incorrectly read "RO." Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claims 2- 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The symbol "N" is not sufficiently defined within any of the above claims. For the purposes of examination, the examiner will take "N" to be the number of moles of the corresponding oxide.

4. Claims 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim states: "a terminal metal fixture and the center electrode provided separately from the center electrode via a conductive bonding layer." The center electrode cannot be provided separately from itself. For the purposes of

examination the examiner will take the claim to mean that the center electrode can be separated from the terminal metal fixture by a conductive bonding layer.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

6. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Sugimoto et al. (6,274,971).

Regarding claim 1, Sugimoto discloses a spark plug with a center electrode, a metal shell, and an "alumina-based" insulator disposed between the center electrode and the metal shell and coated with a glaze layer (column 2, lines 8 and 32). The glaze layer features a Si component in terms of SiO_2 in an amount of 18 to 35 mol%, which overlaps with the claimed range of 35 to 55 mol%, a B component in terms of B_2O_3 in an amount of 25 to 40 mol%, which overlaps with the claimed range of 15 to 35 mol%, a Zn component in terms of ZnO in an amount of 10 to 25 mol%, which overlaps with the claimed range of 5 to 20 mol%, a Ba component in terms of BaO in an amount of 7 to 20 mol%, which overlaps with the claimed range of 0.5 to 20 mol%, two co-added alkali metal components of the group Na_2O, K_2O, or Li_2O, each in the amount of 3 to 9 mol%,

which when combined overlaps with the claimed range of 10 to 15 mol% (column 2, line 20), and up to 1 mol% of Pb in terms of PbO (column 4, line 65).

Regarding claims 2 and 3, Sugimoto discloses a ratio of the alkaline metal components of A1/A2, where A1 represents the molar amount of one of the two co-added alkali metals and A2 represents the molar amount of the other. The ratio must be within the range of 1.0 to 2.0, but any of the three potential alkali components can be A1 or A2. The claimed ranges of $0.4<NK_2O/\ NR_2O<0.8$ and $0.2<NLi_2O/\ NR_2O<0.5$ fall within the range disclosed by Sugimoto. If A1 represents the molar amount of Na_2O and A2 represents the molar amount of K_2O, and the ratio equals 2.0, then A2/A1 equals 0.5. This is equivalent to saying $0.4<NK_2O/\ NR_2O<0.8$, where NR_2O represents the molar amount of Na_2O. The same logic can be applied to the claimed range of $0.2<NLi_2O/\ NR_2O<0.5$.

Regarding claim 4, the disclosed amounts of B, Zn, Ba, Na, K and Li can be combined to satisfy the claimed ratio of $1.5 \leq N(B_2O_3 + ZnO) / N(REO + R_2O) \leq 3.0$. The sum of the lower range limits of both B (25 mol%) and Zn (10 mol%) divided by the sum of the lower range limit of Ba (7 mol%) and the upper range limit of K, Li, or Na (9 mol%) yields a ratio of 2.19, which falls within the claimed range of 1.5 to 3.0.

Regarding claim 5, Sugimoto discloses a preferred Zn content of 15 to 20 mol% and a preferred Ba content of 12 to 18 mol%. The sum of the lower limits of these ranges yields a combined Ba and Zn content of 27 mol%, which falls within the claimed range of 8-30 mol% for Zn and Ba.

Regarding claim 6, Sugimoto discloses a glaze layer that contains at least one of Zr, Ti, Mg, Bi, Sn, and P up to a total of 5 mol%, which fits within the claimed range of 0.5 to 5 mol%, in terms of ZrO_2, TiO_2, MgO, Bi_2O_3, SnO_2, and P_2O_5 (column 4, line 26).

Regarding claim 7, Sugimoto discloses a spark plug with a glaze layer having a terminal metal fixture and a center electrode as one body in a through-hole of the insulator, or separated from the center electrode via a conductive bonding layer (column 9, line 26). The insulation resistance of the spark plug glaze layer is 200 MΩ or more, which is measured by keeping the whole of the spark plug at 500 °C and passing a current between the terminal metal fixture and the metal shell via the insulator (column 9, lines 24-38).

Regarding claim 8, Sugimoto discloses an insulator containing Al "in an amount of 85 to 98% by weight as reduced to Al_2O_3" (column 9, line 57). The glaze layer has an average thermal expansion coefficient of $5.0x10^{-6}$/°C to $8.0x10^{-6}$/°C as measured within the temperature range from 20 °C to 350 °C, which falls within the claimed range of $5.0x10^{-6}$/°C to $8.5x10^{-6}$/°C (column 9, line 59).

Regarding claim 9, the glaze layer of the spark plug has a softening point within the range of 600 °C to 700 °C (column 12, line 14).

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 09/867,759 and claim 21 of copending Application No. 09/794,151. Although the conflicting claims are not identical, they are not patentably distinct from each other because copending application 09/867,759 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 25-45 mol% Si, 20-40 mol% of B, 0.5-15 mol% of Ba or Sr, and 5-10 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/794,151claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 5-60 mol% Si, 3-50 mol% Ba, 5-60 mol% of at least one of Ca, Sr, or Ba, and 2-15 mol% of at least one alkali metal component chosen from Na, K, or Li. These claims overlap with the claimed material of claim 1.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claim 2 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 7 of copending Application No. 09/867,759. Although the conflicting claims are not identical, they are not patentably distinct from each other because copending application 09/867,759 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 25-45 mol% Si, 20-40 mol% of B, 0.5-15 mol% of Ba or Sr, and 5-10 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/867,759 further claims a glaze layer that comprises a combination of alkaline metals Li, Na and K that satisfies the relationship $0.4<NK_2O/\ NR_2O<0.8$. These claims overlap with the claimed material of claim 2.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. Claim 3 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 10 of copending Application No. 09/867,759. Although the conflicting claims are not identical, they are not patentably distinct from each other because copending application 09/867,759 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 25-45 mol% Si, 20-40 mol% of B, 0.5-15 mol% of Ba or Sr, and 5-10 mol% of at least one alkali metal

component chosen from Na, K, or Li. Copending application 09/867,759 further claims a glaze layer that comprises a combination of alkaline metals Li, Na and K that satisfies the relationship $0.2<NLi_2O/\ NR_2O<0.5$. These claims overlap with the claimed material of claim 3.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

11. Claim 5 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 13 of copending Application No. 09/867,759. Although the conflicting claims are not identical, they are not patentably distinct from each other because copending application 09/867,759 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 25-45 mol% Si, 20-40 mol% of B, 0.5-15 mol% of Ba or Sr, and 5-10 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/867,759 further claims a glaze layer that comprises a combination of Zn and one of Ba or Sr totaling 10-30 mol%. These claims overlap with the claimed material of claim 5.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Claim 6 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 16 and 19 of copending Application No. 09/867,759 and claims 21 and 26 of copending Application

No. 09/794,151. Although the conflicting claims are not identical, they are not patentably distinct from each other because copending application 09/867,759 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 25-45 mol% Si, 20-40 mol% of B, 0.5-15 mol% of Ba or Sr, and 5-10 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/867,759 further claims a glaze layer that comprises 0.5-5 mol% of Zr and Ti, 0.1-10 mol% of Mg, and 5 mol% or less of Bi, Sn, Sb, or P. Copending application 09/794,151 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 5-60 mol% Si, 3-50 mol% Ba, 5-60 mol% of at least one of Ca, Sr, or Ba, and 2-15 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application further claims a glaze layer that further comprises 5 mol% or less of oxides with one or more of the following components: Zr, Ti, Mg, Bi, Sn, Sb, or P. These claims overlap with the claimed material of claim 6.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

13. Claim 8 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 28 of copending Application No. 09/867,759 and claims 21 and 28 of copending Application No. 09/794,151. Although the conflicting claims are not identical, they are not

patentably distinct from each other because the copending application 09/867,759 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 25-45 mol% Si, 20-40 mol% of B, 0.5-15 mol% of Ba or Sr, and 5-10 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/867,759 further claims a spark plug with an insulator comprising 85-98 mol% of aluminum oxide and with an average thermal expansion coefficient from $5.0x10^{-6}$/°C to $8.5x10^{-6}$/°C in a temperature range from 20-350 °C. Copending application 09/794,151 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 5-60 mol% Si, 3-50 mol% Ba, 5-60 mol% of at least one of Ca, Sr, or Ba, and 2-15 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/794,151 further claims a spark plug with an insulator comprising 85-98 mol% of aluminum oxide and with an average thermal expansion coefficient from $5.0x10^{-6}$/°C to $8.5x10^{-6}$/°C in a temperature range from 20-350 °C. These claims overlap with the claimed material of claim 8.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. Claim 9 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 31 of copending application 09/867,759 and claims 21 and 29 of copending Application No.

09/794,151. Although the conflicting claims are not identical, they are not patentably distinct from each other because copending application 09/867,759 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 25-45 mol% Si, 20-40 mol% of B, 0.5-15 mol% of Ba or Sr, and 5-10 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/867,759 further claims a spark plug with a glaze layer having a softening point of 520 to 620 °C. Copending application 09/794,151 claims a spark plug with a center electrode, a metal shell, an alumina ceramic insulator between the two with a part of the insulator coated with a glaze comprising oxides with the following components: 1 mol% or less of Pb, 5-60 mol% Si, 3-50 mol% Ba, 5-60 mol% of at least one of Ca, Sr, or Ba, and 2-15 mol% of at least one alkali metal component chosen from Na, K, or Li. Copending application 09/794,151 further claims a spark plug with a glaze layer having a softening point of 600 to 700 °C. These claims overlap with the claimed material of claim 9.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (703)305-4745. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703)305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Sharlene Leurig
December 2, 2002
SL

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